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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/602,945	06/24/2003	John F. Grubb	RL-1627DIV	1816

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EXAMINER	
DOVE, TRACY MAE	
ART UNIT	PAPER NUMBER
1795	

MAIL DATE	DELIVERY MODE
10/30/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/602,945	GRUBB, JOHN F.	
	Examiner	Art Unit	
	Tracy Dove	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *03 October 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *36-40,42 and 43* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *36-40,42 and 43* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

This Office Action is in response to the communication filed on 10/3/07. Applicant's arguments have been considered, but are not persuasive. Claims 36-40, 42 and 43 are pending.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 8/9/07 has been entered.

Claims Analysis

The claims recite the terms "up to", "less than" and "no more than", which all encompass the value zero.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 36-40, 42 and 43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Simpkins et al., US 6,613,468 in view of Taruya et al., JP 2000-294256, as evidenced by Woods, US 5,424,144.

Simpkins teaches a solid oxide fuel cell comprising an electrolyte 40 disposed between and in ionic communication with an anode 30 and a cathode 50 to form an electrochemical cell

10. The solid oxide fuel cell further includes an interconnect 24 (Figure 1; 2:61-66). The solid electrolyte may comprise zirconium oxide (zirconia) (3:20-42). The interconnect is electrically conductive and may comprise a ferritic stainless steel material (6:46-67).

Simpkins does not explicitly teach the ferritic stainless steel composition of the claimed invention, but does disclose the interconnect may be a ferritic stainless steel material.

However, Taruya teaches a fuel cell comprising a separator (interconnect) having a specific ferrite stainless steel composition. Respective component elements of the ferrite stainless steel composition are 10.5-35 wt% of chromium, 0-6 wt% of molybdenum, not more than 0.018 wt% of carbon, not more than 0.2 wt% of titanium and not more than 0.3 wt% of niobium (abstract). The ferrite stainless steel separator may be contained in a fuel cell (0020). Taruya teaches the molybdenum range is preferably 0.5-5 wt% of the ferrite stainless steel composition (0041). Taruya is silent regarding the claimed properties of the ferrite stainless steel. However, since the compositional limitations are disclosed in Taruya, then the recited properties would have been inherent in the teachings of Taruya absent any proof to the contrary.

Therefore, the invention as a whole would have been obvious to one having ordinary skill in the art at the time the invention was made because one of skill would have been motivated to use the ferrite stainless steel composition of Taruya for the interconnect of Simpkins in view of the teaching by Simpkins that a ferritic stainless steel material may be used for the interconnect. Furthermore, the courts have ruled a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Claims to titanium (Ti) alloy with 0.8% nickel

(Ni) and 0.3% molybdenum (Mo) were not anticipated by, although they were held obvious over, a graph in a Russian article on Ti-Mo-Ni alloys in which the graph contained an actual data point corresponding to a Ti alloy containing 0.25% Mo and 0.75% Ni.).

One of skill would have known that the interconnect (for a solid polymer fuel cell) of Taruya could have been used for the interconnect (for a solid oxide fuel cell) of Simpkins. This is evidenced by Woods which teaches a separator suitable for use in various known types of fuel cells, such as solid oxide fuel cells and polymer electrolyte fuel cells. The separator is generally a ferrous metal separator (column 1). Therefore, Woods teaches a ferrous metal separator for use in either a solid oxide fuel cell or a polymer electrolyte fuel cell.

Response to Arguments

Applicant's arguments filed 8/9/07 have been fully considered but they are not persuasive. The 35 USC 112 rejections have been withdrawn.

Applicant argues the Examiner has not expressly set forth a rational basis as to why one of ordinary skill in the art, after considering Simpkins, Taruya and Woods, would have applied the alloy of claim 36 in the manner recited in that claim. Examiner disagrees and believes a rational basis is clearly outlined in the above reasons for rejection under 35 U.S.C. 103(a). Regarding the 103(a) rejection of claims 36-40, 42 and 43, Applicant argues Taruya does not disclose tantalum (Ta). However, ~~the~~ at least claim 36 does not require tantalum, but requires at least one of Nb, Ti or Ta. Applicant argues Taruya does not disclose an alloy including weight percentages of Nb, Ti and/or Ta that satisfy the equation limitation of at least claim 36. However, the courts have ruled a prima facie case of obviousness exists where the claimed ranges and prior art ranges do not overlap but are close enough that one skilled in the art would

have expected them to have the same properties. Titanium Metals Corp. of America v. Banner, 778 F.2d 775, 227 USPQ 773 (Fed. Cir. 1985) (Claims to titanium (Ti) alloy with 0.8% nickel (Ni) and 0.3% molybdenum (Mo) were not anticipated by, although they were held obvious over, a graph in a Russian article on Ti-Mo-Ni alloys in which the graph contained an actual data point corresponding to a Ti alloy containing 0.25% Mo and 0.75% Ni.). Applicant has not shown the ferritic stainless steel alloy of Taruya necessarily has different properties than the ferritic stainless steel alloy of the claimed invention.

Applicant asserts Taruya states it is completely unthinkable to use materials (including interconnects) from other kinds of fuel cells in polymer electrolyte fuel cells. Examiner requests Applicant point out the section of Taruya that states this assertion. Paragraph [0006] has been translated as "it is completely unthinkable to utilize the materials used in commercialized phosphoric acid fuel cells and molten carbonate fuel cells as the constituent material for polymer electrolyte fuel cells". The passage is not relevant to the present rejection of record because none of the cited references are applied to teach phosphoric acid fuel cells and/or molten carbonate fuel cells. Furthermore, the Examiner provides an evidence reference that teaches it is known in the art to use a single interconnect in either a solid oxide fuel cell or a solid polymer fuel cell.

Applicant's arguments regarding sections of the applied references not relied upon by the Examiner in the above rejection are not persuasive.

Applicant argues Simpkins teaches a ferritic stainless steel that is coated may be used as an interconnect in solid oxide fuel cells. Applicant asserts this teaching actually teaches away from the claimed composition. However, Simpkins merely teaches the ferritic stainless steel

may be coated. Therefore, Simpkins teaches and suggests that the ferritic stainless steel may be provided with or without a coating for use as an interconnect in solid oxide fuels. Simpkins states "ferritic stainless steels...may be coated...to achieve the same desired properties" as uncoated ferritic stainless steels. Thus, Simpkins clearly does not teach away from the claimed invention because Simpkins teaches the ferritic stainless steels may be coated or uncoated.

Applicant argues one of skill in the art would not look to the materials of construction of a fuel cell that operates at 80C (the polymer type fuel cell of Taruya) for a fuel cell that operates at approximately 800-1000C (the SOFC of Simpkins). Examiner points out that Simpkins teaches ferritic stainless steel interconnects are known for use in a SOFC. Taruya is applied to show a teaching of a specific ferritic stainless steel interconnect for use in fuel cells. Examiner has provided further evidence (Woods) that the ferritic stainless steel interconnect of a polymer electrolyte fuel cell may be used for the ferritic stainless steel interconnect of a SOFC.

Applicant argues Simpkins and Taruya are not properly combined because Simpkins teaches a solid oxide fuel cell and Taruya teaches a solid polymer electrolyte fuel cell. However, it is known in the art the interconnect materials of one type of fuel cell, in addition to other materials such as manifold and housing materials, may be substituted for interconnect materials of another type of fuel cell (see Woods). Both Simpkins and Taruya teaches ferritic stainless steel interconnect materials for fuel cells. *Applicant has not provided any persuasive argument why the interconnect materials of a polymer electrolyte fuel cell is not applicable as an interconnect material of a solid oxide fuel cell.* Applicant points out that some materials of a solid oxide fuel cell may not be used for a polymer electrolyte fuel cell. Examiner agrees. However, Examiner is not relying upon using the electrolyte or electrode materials of the

polymer electrolyte fuel cell of Taruya for the solid oxide fuel cell of Simpkins. Such arguments are not applicable to the rejections of record.

Examiner requested Applicant reference the specific section of Taruya that teaches "there would be no reasonable expectation of success in using components designed for use in one type of fuel cell in other types of fuel cells", as asserted by Applicant. The section pointed to by Applicant on page 7 of the remarks is referencing the electrolyte and electrode materials, which is not relevant to the rejection of record. Examiner is not attempting to substitute the polymer electrolyte of Taruya for the solid oxide electrolyte of Simpkins. Applicant argument that a ferritic stainless steel interconnect was "designed for use" in a polymer electrolyte fuel cell is still not supported. The prior art clearly teaches ferritic stainless steel interconnects are used ("designed for use") in solid oxide fuel cells (Simpkins) and in polymer electrolyte fuel cells (Taruya).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tracy Dove whose telephone number is 571-272-1285. The examiner can normally be reached on Monday-Thursday (9:00-7:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Pat Ryan can be reached on 571-272-1292. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

October 26, 2007

TRACY DOVE
PRIMARY EXAMINER